

Remarks

Applicant has amended claims 14, 18, 22, and 27 to clarify the concepts claimed therein. Applicant makes no admission, however, that these amendments narrow the scope of the claims. In fact, the amendments broaden these claims, at least in part. For at least the reasons given below, Applicant submits that all of the currently pending claims, claims 2-10, 12-24, and 26-28, are allowable.

Section 102 Rejections

The Examiner rejects claims 2-7, 10, and 12-15 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 2,915,087 issued to Kruschik ("*Kruschik*"). Office Action pg. 2. The Examiner also rejects claims 6, 8-9, 14, 16-17, 22, 24, and 27-28 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 817,153 issued to Barr ("*Barr*"). Office Action pg. 3. Applicant, however, disagrees with the rejections.

To anticipate a claim under § 102, a reference must teach each and every limitation of the claim. M.P.E.P. § 2131. Furthermore, the elements in the reference must be arranged as specified in the claim. *Id.* *Kruschik*, however, fails to teach or suggest at least one limitation in each of claims 2-7, 10, and 12-15. Additionally, *Barr* fails to teach or suggest at least one limitation in each of claims 6, 8-9, 14, 16-17, 22, 24, and 27-28. Thus, the references do not anticipate these claims.

Claim 6 is an independent claim containing limitations that neither *Kruschik* nor *Barr* teaches or suggests. Claim 6 recites:

A valve comprising:

a valve body defining an interior cavity in communication with a first fluid passage and a second fluid passage, the volume of the cavity substantially equally distributed about a central axis;

a tubular throttling cage in the cavity and in communication with the first fluid passage, the tubular throttling cage positioned such that an annular volume is defined between the throttling cage and a wall of the cavity and having

a plurality of flow ports arranged about a perimeter of the throttling cage, wherein fluid flows between the first fluid passage and the second fluid passage through the throttling cage, a longitudinal axis of the throttling cage is positioned offset from the central axis of the cavity, and the flow ports are angled towards the second fluid passage; and

a plug closely received in the throttling cage and moveable about the longitudinal axis to selectively cover the flow ports thereby restricting flow between the first fluid passage and the second fluid passage.

Nowhere, however, does either *Kruschik* or *Barr* teach or suggest “a tubular throttling cage in the cavity and in communication with the first fluid passage, the tubular throttling cage positioned such that an annular volume is defined between the throttling cage and a wall of the cavity and having a plurality of flow ports arranged about a perimeter of the throttling cage, wherein ... a longitudinal axis of the throttling cage is positioned offset from the central axis of the cavity, and the flow ports are angled towards the second fluid passage.”

Kruschik teaches a spacer having a lower ring 4 and an upper ring 6. FIGs. 1-2; col. 2, ll. 29-48. Between lower ring 4 and upper ring 6 are main cross members 7-9 and auxiliary cross members 10-12, which all have rounded cross-sections. *Id.* At least the port between cross member 11 and cross member 7 and the port between cross member 7 and cross member 10, however, are not angled towards the exit port. That is, they do not alter fluid flow in the direction of the exit port. Thus, *Kruschik* does not teach or suggest “a tubular throttling cage in the cavity and in communication with the first fluid passage, the tubular throttling cage positioned such that an annular volume is defined between the throttling cage and a wall of the cavity and having a plurality of flow ports arranged about a perimeter of the throttling cage, wherein ... a longitudinal axis of the throttling cage is positioned offset from the central axis of the cavity, and the flow ports are angled towards the second fluid passage.”

Applicant notes the Examiner's assertion that *Kruschik* is similar to FIG. 2 of the Application, because, according to the Examiner, “only the port 30a is pointed at the passage 18” in FIG. 2. Office Action pg. 2. Applicant, however, disagrees. FIG. 2 of the Application explicitly shows that ports 30 are angled towards second fluid passage 18. The detailed description of the Application corroborates this. pg. 7, ll. 10-23. Moreover, the fact that ports 30

do not achieve perfect fluid flow alignment with fluid passage 18 is irrelevant. The claim language simply does not demand perfection. Thus, FIG. 2 supports claim 6 in regards to a feature that *Kruschik* fails to teach or suggest.

Barr teaches a valve 1 having an inlet connection 8 and an outlet connection 9. FIG. 1; p. 1, ll. 31-51. The valve includes a bushing 16 having a number of lateral ports 30. FIG. 2; p. 2, l. 95 – p. 3, l. 10. However, at least two of lateral ports 30 are angled away from outlet connection 9. *Id.* Thus, *Barr* does not teach or suggest “a tubular throttling cage in the cavity and in communication with the first fluid passage, the tubular throttling cage positioned such that an annular volume is defined between the throttling cage and a wall of the cavity and having a plurality of flow ports arranged about a perimeter of the throttling cage, wherein ... a longitudinal axis of the throttling cage is positioned offset from the central axis of the cavity, and the flow ports are angled towards the second fluid passage.”

Because neither *Kruschik* nor *Barr* teaches or suggests all of the limitations of claim 6, neither can anticipate it. Applicant, therefore, respectfully requests the Examiner to withdraw the § 102 rejection thereof.

Claims 2-5, 7, and 10 depend from claim 6 and, hence, contain all of its limitations, which have already been shown to distinguish over *Kruschik*. Furthermore, these claims contain additional limitations to those in claim 6. For example, claim 7 specifies that “walls of the flow ports pass substantially straight through the throttling cage.” Nowhere, however, does *Kruschik* teach or suggest such a limitation. Indeed, *Kruschik* specifically teaches that all cross members are to have rounded cross-sections. col. 2, ll. 29-48. Thus, *Kruschik* fails to teach or suggest this limitation. For at least this reason, and for the reasons given with respect to claim 6, Applicant submits that *Kruschik* fails to teach or suggest all of the limitations of claims 2-5, 7, and 10 and, therefore, fails to anticipate these claims. Applicant respectfully requests that the Examiner withdraw the § 102 rejection of these claims.

Claims 8-9 depend from claim 6 and, hence, contain all of its limitations, which have already been shown to distinguish over *Barr*. Furthermore, these claims contain additional limitations to those in claim 6. For example, claim 8 specifies that “the throttling cage has a

triangular flow splitter.” But nowhere does *Barr* teach or suggest such a limitation. Applicant notes the Examiner’s assertion regarding the “upper and lower segments.” However, the segments are not a triangular flow splitter. Thus, *Barr* fails to teach or suggest this limitation. For at least this reason, and for the reasons given with respect to claim 6, Applicant submits that *Barr* fails to teach or suggest all of the limitations of claims 8-9 and, therefore, fails to anticipate these claims. Applicant respectfully requests that the Examiner withdraw the § 102 rejection of these claims.

Claim 14 is another independent claim containing limitations that neither *Kruschik* nor *Barr* teaches or suggests. Claim 14, as amended, recites:

A fluid flow control device, comprising:
a flow body having an internal chamber;
a first fluid passage intersecting the chamber;
a second fluid passage intersecting the chamber;
a tubular member residing in the internal chamber, the tubular member being in communication with the first fluid passage and having a plurality of lateral ports, wherein substantially all of the lateral ports direct fluid flow towards the second fluid passage; and
a plug adapted for movement in an interior of the tubular member to selectively cover a portion of the ports;
wherein an annular volume between the tubular member and the flow body is smallest opposite the second fluid passage.

For reasons similar to those discussed with respect to claim 6, however, nowhere does either *Kruschik* or *Barr* teach or suggest “a tubular member residing in the internal chamber, the tubular member being in communication with the first fluid passage and having a plurality of lateral ports, wherein substantially all of the lateral ports direct fluid flow towards the second fluid passage.” For at least this reason, both *Kruschik* and *Barr* fail to teach or suggest all of the limitations of claim 14. Thus, Applicant respectfully requests the Examiner to withdraw the § 102 rejection thereof.

Claims 12-13 and 15 depend from claim 14 and, hence, contain all of its limitations, which have already been shown to distinguish over *Kruschik*. Furthermore, these claims contain additional limitations to those in claim 14. For example, claim 15 specifies that “walls of the

lateral ports pass substantially straight through the tubular member.” For reasons similar to those discussed with respect to claim 7, however, *Kruschik* fails to teach or suggest such a limitation. For at least this reason, and for the reasons given with respect to claim 14, Applicant submits that *Kruschik* fails to teach or suggest all of the limitations of claims 12-13 and 15 and, therefore, fails to anticipate these claims. Applicant, therefore, respectfully requests the Examiner to withdraw the § 103 rejection thereof.

Claims 16-17 depend from claim 14 and, hence, contain all of its limitations, which have already been shown to distinguish over *Barr*. Furthermore, these claims contain additional limitations to those in claim 14. For example, claim 16 specifies that “two adjacent lateral ports form a triangular flow splitter in the tubular member.” For reasons similar to those discussed with respect to claim 8, however, nowhere does *Barr* teach or suggest such a limitation. For at least this reason, and for the reasons given with respect to claim 14, Applicant submits that *Barr* fails to teach or suggest all of the limitations of claims 16-17 and, therefore, fails to anticipate these claims. Applicant respectfully requests the Examiner to withdraw the § 102 rejection thereof.

Claim 22 is an independent claim containing limitations that *Barr* fails to teach or suggest. Claim 22, as amended, recites:

A valve comprising:

a valve body defining an interior cavity in communication with a first fluid passage and a second fluid passage;

a tubular throttling cage in the cavity having an open end in communication with the first fluid passage and a plurality of flow ports arranged about a perimeter of the throttling cage, walls of the flow ports being substantially straight through the throttling cage, wherein substantially all of the flow ports direct flow toward a first direction, and wherein fluid flows between the first fluid passage and the second fluid passage through the throttling cage; and

a plug closely received in the throttling cage and moveable in the throttling cage to selectively cover the flow ports thereby restricting flow between the first fluid passage and the second fluid passage.

Nowhere, however, does *Barr* teach or suggest “a tubular throttling cage in the cavity having an open end in communication with the first fluid passage and a plurality of flow ports

arranged about a perimeter of the throttling cage, walls of the flow ports being substantially straight through the throttling cage, wherein substantially all of the flow ports direct flow towards a first direction, and wherein fluid flows between the first fluid passage and the second fluid passage through the throttling cage.” In fact, not even a majority of the flow ports in *Barr* direct flow towards one direction. FIG. 2. For at least this reason, Applicant submits that *Barr* fails to teach or suggest all of the limitations of claim 22. Applicant, therefore, respectfully requests the Examiner to withdraw the § 102 rejection thereof.

Claim 24 depends from claim 22 and, hence, contains all of its limitations, which have already been shown to distinguish over *Barr*. Furthermore, claim 24 contains additional limitations to those in claim 22. Because *Barr* fails to teach or suggest all of the limitations of claim 22, it surely fails to teach or suggest all of the limitations of claim 24. For at least this reason, and for the reasons give with respect to claim 22, Applicant submits that claim 24 contains limitations not taught or suggested by *Barr* and, accordingly, respectfully requests the Examiner to withdraw the § 102 of this claim.

Claim 27 is an independent claim containing limitations that *Barr* fails to teach or suggest. Claim 27, as amended, recites:

A valve, comprising:
a flow body having an internal chamber;
an inlet intersecting the chamber;
an outlet intersecting the chamber;
a tubular member residing in the internal chamber, the tubular member in communication with the inlet and having a plurality of lateral ports in communication with the chamber, wherein substantially all of the lateral ports direct flow towards the outlet; and
a plug movable in an interior of the tubular member to selectively cover a portion of the ports;
wherein an annular volume between the tubular member and the flow body is smallest opposite the outlet.

Nowhere, however, does *Barr* teach or suggest “a tubular member residing in the internal chamber, the tubular member in communication with the inlet and having a plurality of lateral ports in communication with the chamber, wherein substantially all of the lateral ports direct

flow towards the outlet.” In fact, at least two of the four lateral ports 30 in *Barr* direct flow away from outlet connection 9. FIG. 2. Thus, *Barr* fails to teach or suggest this limitation.

Accordingly, *Barr* cannot anticipate claim 27, and Applicant respectfully requests the Examiner to withdraw the § 102 rejection thereof.

Claim 28 depends from claim 27 and, hence, contains all of its limitations, which have already been shown to distinguish over *Barr*. Furthermore, the claim contains additional limitations to those in claim 27. In specific, claim 28 specifies “a triangular flow splitter in the tubular member opposite the outlet.” But for reasons similar to those discussed for claim 8, *Barr* fails to teach or suggest this limitation. For at least this reason, and for the reasons given with respect to claim 27, Applicant submits that *Barr* fails to teach or suggest all of the limitations of claim 28 and, therefore, fails to anticipate these claims. Applicant respectfully requests that the Examiner withdraw the § 102 rejection of this claim.

Section 103 Rejections

The Examiner rejects claim 26 under 35 U.S.C. § 103 as unpatentable over *Barr* in view of *Kruschik*. Office Action pg. 3. The Examiner also rejects claims 18-23 under 35 U.S.C. § 103 as being unpatentable over *Kruschik* in view of JP Abstract No. 114,066 (“*JP Abstract*”). Office Action pg. 3. Applicant, however, disagrees with the rejections.

To render a claim *prima facie* unpatentable under § 103 based on a combination of references, there must be a motivation to combine the references, there must be a reasonable expectation of success in making the combination, and the combination must teach or suggest all of the limitations. M.P.E.P. § 2143. Furthermore, the combination cannot alter the principle of operation of the references. *Id.*

Claim 26 depends from 27 and, hence, contains all of its limitations, which have already been shown to distinguish over *Barr*. Furthermore, the Examiner explicitly admits, Office Action p. 2, that *Barr* does not teach “different sized ports,” which is one portion of claim 26. Thus, the Examiner attempts to incorporate *Kruschik*'s supposed of varying port sizes to make this rejection.

But, even if *Kruschik* contains such a teaching, combining it with *Barr* does not teach all of the limitations of claim 26. None of ports 30 in *Barr* face outlet connection 9. Hence, varying the ports' sizes would not produce a system wherein "a lateral flow port facing the outlet is larger than at least one of the other lateral flow ports."

Thus, *Barr* does not teach all of the limitations of claim 27, much less claim 26, and the supposed combination of *Barr* and *Kruschik* does not teach all of the limitations of claim 26. Therefore, claim 26 is allowable, and Applicant respectfully request that the Examiner withdraw the § 103 rejection thereof.

Claim 18 is an independent claim containing limitations that *Kruschik* and *JP Abstract* fail to teach or suggest. Claim 18, as amended, recites:

A throttling cage for a globe valve, comprising:
a tubular body having a plurality of laterally oriented flow ports,
walls of the flow ports being substantially straight through the tubular body,
wherein substantially all of the ports direct flow towards a first direction.

For reasons similar to those given with respect to claim 14, nowhere does *Kruschik* teach or suggest "a tubular body having a plurality of laterally oriented flow ports, ..., wherein substantially all of the ports direct flow towards a first direction." Furthermore, as the Examiner explicitly recognizes, Office Action p. 3, and as Applicant previously pointed out with respect to claim 7, nowhere does *Kruschik* teach or suggest "a tubular body having a plurality of laterally oriented flow ports, walls of the flow ports being substantially straight through the tubular body." To address this deficiency, the Examiner attempts to combine *JP Abstract* with *Kruschik*. However, this combination fails because *Kruschik* teaches that all of cross members 7-12 are to have a circular cross-section. col. 2, ll. 29-48. Thus, *Kruschik* teaches away from the very modification the Examiner is attempting to make with the combination. For at least these reasons, Applicant submits that *Kruschik* and *JP Abstract* fail to teach or suggest all of the limitations of claim 18. Applicant, therefore, respectfully requests the Examiner to withdraw the § 103 rejection thereof.

Claims 19-21 depend from claim 18 and, hence, contain all of its limitations, which have already been shown to distinguish over *Kruschik* and *JP Abstract*. Furthermore, these claims contain additional limitations to those in claim 18. For example, claim 21 specifies that "two adjacent flow ports form a triangular flow splitter." Nowhere, however, does *Kruschik* teach or suggest such a limitation. Furthermore, for the reasons discussed with respect to claim 18, *Kruschik* is not properly combinable with *JP Abstract*. For at least these reasons, and for the reasons given with respect to claim 18, Applicant submits that *Kruschik* and *JP Abstract* fail to teach or suggest all of the limitations of claims 19-21. Applicant, therefore, respectfully requests that the Examiner withdraw the § 103 rejection of these claims.

Claim 22 is an independent claim containing limitations that *Kruschik* and *JP Abstract* fail to teach or suggest. Claim 22, as amended, recites:

A valve comprising:

a valve body defining an interior cavity in communication with a first fluid passage and a second fluid passage;

a tubular throttling cage in the cavity having an open end in communication with the first fluid passage and a plurality of flow ports arranged about a perimeter of the throttling cage, walls of the flow ports being substantially straight through the throttling cage, wherein substantially all of the flow ports direct flow towards a first direction, and wherein fluid flows between the first fluid passage and the second fluid passage through the throttling cage; and

a plug closely received in the throttling cage and moveable in the throttling cage to selectively cover the flow ports thereby restricting flow between the first fluid passage and the second fluid passage.

For reasons similar to those given with respect to claim 14, *Kruschik* fails to teach or suggest "a tubular throttling cage in the cavity having an open end in communication with the first fluid passage and a plurality of flow ports arranged about a perimeter of the throttling cage, ... wherein substantially all of the flow ports direct flow towards a first direction, and wherein fluid flows between the first fluid passage and the second fluid passage through the throttling cage." Also, as the Examiner explicitly recognizes, Office Action p. 3, and as Applicant previously pointed out, *Kruschik* fails to teach or suggest "a tubular throttling cage in the cavity having an open end in communication with the first

fluid passage and a plurality of flow ports arranged about a perimeter of the throttling cage, walls of the flow ports being substantially straight through the throttling cage." To address this deficiency, the Examiner attempts to combine *JP Abstract* with *Kruschik*. However, this combination fails because *Kruschik* teaches that all of cross members 7-12 are to have a circular cross-section. col. 2, ll. 29-48. Thus, *Kruschik* teaches away from the very modification the Examiner is attempting to make with the combination. For at least these reasons, Applicant submits that *Kruschik* and *JP Abstract* fail to teach or suggest all of the limitations of claim 22. Applicant, therefore, respectfully requests the Examiner to withdraw the § 103 rejection thereof.

Claim 23 depends from claim 22 and, hence, contain all of its limitations, which have already been shown to distinguish over *Kruschik* and *JP Abstract*. Furthermore, claim 23 contains additional limitations to those in claim 22. Because *Kruschik* and *JP Abstract* fail to teach or suggest all of the limitations of claim 22, they surely fail to teach or suggest all of the limitations of claim 23. For at least this reason, and for the reasons give with respect to claim 22, Applicant submits that claim 23 contains limitations not taught or suggested by *Kruschik* and *JP Abstract* and, accordingly, respectfully requests the Examiner to withdraw the § 103 of this claim.

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Conclusion

For the reasons given above, Applicant submits that a good-faith effort has been made to advance the prosecution of the Application. Furthermore, Applicant submits that the Application is in condition for allowance and respectfully requests same. If the Examiner feels that prosecution may be advanced by a conference, however, Applicant respectfully requests the Examiner to contact the below-listed attorney.

Applicant believes that no fees are required by this paper. But if Applicant is incorrect, Applicant respectfully requests that any required fees be charged to Deposit Account No. 06-1050, with reference to the instant case.

Respectfully submitted,

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